In the claims:

Claims 1-152 (Cancled).

153. (New) A method of establishing a feeder cells-free human embryonic stem cell line capable of being maintained in an undifferentiated, pluripotent and proliferative state, the method comprising:

(a) obtaining human embryonic stem cells, and;

(b) culturing said human embryonic stem cells under culturing conditions devoid of feeder cells and including a matrix and a tissue culture medium supplemented with $TGF\beta_1$, bFGF and/or LIF to thereby obtain the feeder cells-free human embryonic stem cell line.

154. (New) The method of claim 153, further comprising cloning a cell from the human embryonic stem cell line resultant from step (b) under said culturing conditions.

155. (New) A method of propagating a human embryonic stem cell line in an undifferentiated, pluripotent and proliferative state under culturing conditions devoid of feeder cells, the method comprising culturing cells of the human embryonic stem cell line on a matrix and a tissue culture medium supplemented with $TGF\beta_1$, bFGF and/or LIF to thereby maintain the cells of the human embryonic stem cell line in an undifferentiated, pluripotent and proliferative state.

156. (New) The method of claim 153, wherein said matrix is a fibronectin matrix.

157. (New) The method of claim 156, wherein said fibronectin is selected from the group consisting of bovine fibronectin, recombinant bovine fibronectin, human fibronectin, recombinant human fibronectin, mouse fibronectin, recombinant mouse fibronectin, and synthetic fibronectin.

158. (New) The method of claim 153, wherein said culturing conditions are substantially free of xeno contaminant and where is said matrix is selected from the group consisting of human plasma fibronectin matrix, recombinant human plasma fibronectin matrix, human cellular fibronectin matrix, recombinant human cellular fibronectin matrix, synthetic fibronectin.

159. (New) The method of claim 153, wherein the human embryonic stem cell line comprises at least 85 % of undifferentiated human embryonic stem cells.

160. (New) The method of claim 153, wherein the cells of the human embryonic stem cell line maintain a doubling time of at least 25 hours.

161. (New) The method of claim 153, wherein said tissue culture medium further includes serum and/or serum replacement.

162. (New) The method of claim 161, wherein said serum and/or said serum replacement is provided at a concentration of at least 10 %.

163. (New) The method of claim 161, wherein said serum and/or said serum replacement is provided at a concentration of 15 %.

164. (New) The method of claim 153, wherein said $TGF\beta_1$ is provided at a concentration of at least 0.06 ng/ml.

165. (New) The method of claim 153, wherein said $TGF\beta_1$ is provided at a concentration of 0.12 ng/ml.

166. (New) The method of claim 153, wherein said bFGF is provided at a concentration of at least 2 ng/ml.

167. (New) The method of claim 153, wherein said bFGF is provided at a concentration of 4 ng/ml.

168. (New) The method of claim 153, wherein said LIF is provided at a concentration of at least 500 u/ml.

169. (New) The method of claim 153, wherein said LIF is provided at a concentration of 1000 u/ml.

170. (New) A method of establishing a xeno – free, feeder cells-free embryonic stem cell line of a species capable of being maintained in an undifferentiated, pluripotent and proliferative state, the method comprising:

(a) obtaining embryonic stem cells, and;

(b) culturing said embryonic stem cells under culturing conditions devoid of feeder cells and xeno contaminants and including a species - derived matrix and a tissue culture medium to thereby obtain the xeno – free, feeder cells-free embryonic stem cell line of the species.

171. (New) A method of propagating a species embryonic stem cell line in an undifferentiated, pluripotent and proliferative state under culturing conditions devoid of feeder cells and xeno contaminants, the method comprising culturing cells of the species embryonic stem cell line on a species - derived matrix and a tissue culture medium to thereby maintain the cells of the species embryonic stem cell line in an undifferentiated, pluripotent and proliferative state.

172. (New) The method of claim 170, wherein said matrix is a species – derived fibronectin matrix.

173. (New) The method of claim 170, wherein said feeder cells-free culturing conditions are substantially free of xeno contaminants.

174. (New) The method of claim 170, wherein the species embryonic stem cell line comprises at least 85 % of undifferentiated species embryonic stem cells.

175. (New) The method of claim 170, wherein the cells of the species embryonic stem cell line maintain a doubling time of at least 20 hours.

176. (New) The method of claim 170, wherein said tissue culture medium includes a species - derived serum and/or a serum replacement.

177. (New) The method of claim 176, wherein said species - derived serum is provided at a concentration of at least 5 %.

178. (New) The method of claim 176, wherein said serum replacement is provided at a concentration of at least 10 %.

179. (New) The method of claim 176, wherein said serum replacement is provided at a concentration of 15 %.

180. (New) The method of claim 176, wherein said tissue culture medium further includes at least one growth factor.

181. (New) The method of claim 180, wherein said at least one growth factor is selected from the group consisting of $TGF\beta_1$, bFGF, and LIF.

182. (New) The method of claim 181, wherein said $TGF\beta_1$ is provided at a concentration of at least 0.06 ng/ml.

183. (New) The method of claim 181, wherein said $TGF\beta_1$ is provided at a concentration of 0.12 ng/ml.

184. (New) The method of claim 181, wherein said bFGF is provided at a concentration of at least 2 ng/ml.

185. (New) The method claim 181, wherein said bFGF is provided at a concentration of 4 ng/ml.

186. (New) The method of claim 181, wherein said LIF is provided at a concentration of at least 500 u/ml.

187. (New) The method of claim 181, wherein said LIF is provided at a concentration of 1000 u/ml.

188. (New) The method of any of claim 170, wherein said tissue culture medium is a species – derived conditioned medium.

189. (New) A cell culture comprising undifferentiated, pluripotent and proliferative human embryonic stem cells in a culture medium, wherein the cell culture is substantially free of xeno- and/or feeder cells contaminants.

190. (New) The cell culture of claim 189, wherein the culture medium includes serum replacement.

191. (New) The cell culture of claim 190, wherein said serum replacement is provided at a concentration of at least 10 %.

192. (New) The cell culture of claim 190, wherein said serum replacement is provided at a concentration of 15 %.

193. (New) The cell culture of claim 190, wherein said culture medium further includes $TGF\beta_1$, bFGF and/or LIF.

194. (New) The cell culture of claim 193, wherein said $TGF\beta_1$ is provided at a concentration of at least 0.06 ng/ml.

195. (New) The cell culture of claim 193, wherein said $TGF\beta_1$ is provided at a concentration of 0.12 ng/ml.

196. (New) The cell culture of claim 193, wherein said bFGF is provided at a concentration of at least 2 ng/ml.

197. (New) The cell culture of claim 193, wherein said bFGF is provided at a concentration of 4 ng/ml.

198. (New) The cell culture of claim 193, wherein said LIF is provided at a concentration of at least 500 u/ml.

199. (New) The cell culture of claim 193, wherein said LIF is provided at a concentration of 1000 u/ml.

200. (New) The cell culture of claim 189, wherein said human embryonic stem cells are maintainable in an undifferentiated, pluripotent and proliferative state for at least 38 passages.

201. (New) The cell culture of claim 189, wherein said human embryonic stem cells maintain a doubling time of at least 25 hours.

202. (New) The cell culture of claim 189, wherein said human embryonic stem cells comprise at least 85 % of undifferentiated stem cells.

203. (New) A xeno-free, feeder cells-free culture system comprising a matrix and a tissue culture medium, the xeno-free, feeder cells-free culture system being selected capable of maintaining human embryonic stem cells cultured therein in a proliferative, pluripotent and undifferentiated state.

204. (New) The culture system of claim 203, wherein said matrix is human-derived fibronectin.

205. (New) The culture system of claim 204, wherein said human-derived fibronectin is selected from the group consisting of human plasma fibronectin, recombinant human plasma fibronectin, human cellular fibronectin, recombinant human cellular fibronectin, and synthetic fibronectin.

206. (New) The culture system of claim 203, wherein said tissue culture medium includes serum replacement.

207. (New) The culture system of claim 206, wherein said serum replacement is provided at a concentration of at least 10 %.

208. (New) The culture system of claim 206, wherein said serum replacement is provided at a concentration of 15 %.

209. (New) The culture system of claim 203, wherein said tissue culture medium further includes $TGF\beta_1$, bFGF and/or LIF.

210. (New) The culture system of claim 209, wherein said $TGF\beta_1$ is provided at a concentration of at least 0.06 ng/ml.

211. (New) The culture system of claim 209, wherein said $TGF\beta_1$ is provided at a concentration of 0.12 ng/ml.

212. (New) The culture system of claim 209, wherein said bFGF is provided at a concentration of at least 2 ng/ml.

213. (New) The culture system of claim 209, wherein said bFGF is provided at a concentration of 4 ng/ml.

214. (New) The culture system of claim 209, wherein said LIF is provided at a concentration of at least 500 u/ml.

215. (New) The culture system of claim 209, wherein said LIF is provided at a concentration of 1000 u/ml.

216. (New) The culture system of claim 203, wherein said human embryonic stem cells comprise at least 85 % of undifferentiated human embryonic stem cells.

217. (New) The culture system of claim 203, wherein said human embryonic stem cells maintain a doubling time of at least 25 hours.

218. (New) A method of treating an individual in need of cell replacement and/or tissue regeneration, comprising administering a human embryonic stem cell preparation being free of xeno and feeder cells contaminants to the individual.

219. (New) The method of claim 218, further comprising preparing said human embryonic stem cell preparation prior to said administering, said preparing being effected by:

(a) obtaining human embryonic stem cells, and;

(b) culturing said human embryonic stem cells under culturing conditions devoid of feeder cells and xeno contaminants and including a human-derived fibronectin matrix and a tissue culture medium supplemented with $TGF\beta_1$, bFGF and/or LIF to thereby prepare the human embryonic stem cell preparation.

220. (New) The method of claim 219, wherein said human-derived fibronectin is selected from the group consisting of human plasma fibronectin, recombinant human plasma fibronectin, human cellular fibronectin, recombinant human cellular fibronectin, and synthetic fibronectin.

221. (New) A method of maintaining human embryonic stem cells in an undifferentiated, pluripotent and proliferative state under culturing conditions devoid of feeder cells, the method comprising culturing the human embryonic stem cells under culturing conditions including a matrix and tissue culture medium supplemented with at least one growth factor provided at a concentration range selected capable of maintaining said stem cells for at least 56 passages with a doubling time of at least 25 hours.

222. (New) The method of claim 221, wherein said human embryonic stem cells comprise at least 85 % of undifferentiated human embryonic stem cells.

223. (New) The method of claim 221, wherein said matrix is selected from the group consisting of human-derived fibronectin, human-derived laminin, foreskin fibroblast matrix, MEFs matrix.

224. (New) The method of claim 223, wherein said human-derived fibronectin is selected from the group consisting of human plasma fibronectin, recombinant human plasma fibronectin, human cellular fibronectin, recombinant human cellular fibronectin, and synthetic fibronectin.

225. (New) The method of claim 221, wherein said at least one growth factor is selected from the group consisting of $TGF\beta_1$, bFGF, and LIF.

226. (New) The method of claim 225, wherein said $TGF\beta_1$ is provided at a concentration range of 0.06-0.24 ng/ml.

227. (New) The method of claim 225, wherein said bFGF is provided at a concentration range of 2-8 ng/ml.

228. (New) The method of claim 226, wherein said LIF is provided at a concentration range of 500-2000 u/ml.

229. (New) The method of claim 221, wherein said culturing conditions include serum replacement at a concentration of 15 %, $TGF\beta_1$ at a concentration of 0.12 ng/ml, LIF at a concentration of 1000 u/ml, and bFGF at a concentration of 4 ng/ml.